CONVERTIBLE DRIVE TRAIN FOR RADIO-CONTROLLED TOY

CROSS-REFERENCE TO RELATED APPLICATIONS

This invention is related to U.S. patent application Ser. No. 29/191,449, entitled "Packaging for Radio-Controlled Toy" (Inventor: Douglas M. Galleti), U.S. patent application Ser. No. 29/191,453, entitled "Radio Frequency Toy Controller" (Inventor: Douglas M. Galletti), and U.S. patent application Ser. No. 10/681,085 entitled "Adjustable Steering Mechanism for Radio Frequency Toy Controller" (Inventor: Nobuaki Ogihara), all of which were filed on the same day as the present application.

BACKGROUND

This disclosure relates generally to radio-controlled mobile toys and, more specifically, to modifying radio-controlled mobile toys to convert the toy from a two-wheel drive configuration to a four-wheel drive configuration.

Radio-controlled toy cars generally include a fixed drive train such that the car is preconfigured for either rear two-wheel drive, front two-wheel drive or four-wheel drive operation. However, as can be appreciated, different scenarios of operation of radio-controlled cars can lead to one mode of operation being desired over another. For instance, when operating a radio-controlled car over rough terrain, a four-wheel drive mode may be preferred, whereas, in racing situations, a two-wheel drive mode may be preferred.

Moreover, radio-controlled car enthusiasts often prefer to customize and enhance their radio-controlled cars, thereby modifying the radio-controlled cars for use in different situations. Accordingly, it is desirable to provide a radio-controlled toy car, which can be disassembled, modified and reassembled to enhance, or otherwise alter, the performance of the radio-controlled toy car.

Therefore, what is needed is a radio-controlled toy car that includes a drive train that can be modified for different modes of operation.

SUMMARY

A radio-controlled car convertible from a two-wheel drive configuration to a four-wheel drive configuration is provided. The radio-controlled car includes a chassis, a first drive assembly positioned in a first portion of the chassis, and a modular second drive assembly adapted to be inserted into a second portion of the chassis to modify the radio-controlled car to a four-wheel drive configuration.

A radio-controlled car is provided, which includes means for providing the car with a two-wheel drive configuration, means for converting the car from the two-wheel drive configuration to a four-wheel drive configuration, and means for adjusting the center of gravity of the radio-controlled car to correspond to the two-wheel drive configuration and the four-wheel drive configuration.

A radio-controlled car is provided. The radio-controlled car includes a chassis having a front portion, a middle portion and a rear portion. A rear wheel drive assembly is housed in the rear portion of the chassis, and a motor is housed in the middle portion of the chassis, the motor being adapted to impart motion to the rear wheel drive assembly. The radio-controlled car further includes a drive shaft operatively connected to the motor, the drive shaft extending from the rear portion of the chassis to the front portion of the chassis, and a modular front-wheel drive assembly adapted to be inserted into the front portion of the chassis, whereby insertion of the modular front-wheel drive assembly operatively engages the front-wheel drive assembly with the drive shaft to convert the radio-controlled car from a two-wheel drive configuration to a four-wheel drive configuration.

A modular front-wheel drive assembly for insertion into a chassis of a radio-controlled car is provided. The modular front-wheel drive assembly includes a rotatable element for operatively engaging a drive shaft of the radio-controlled car, first and second rod members coupled to and laterally extending from the rotatable element, and a first knuckle arm assembly fixedly disposed about the first rod member and a second knuckle arm assembly fixedly disposed about the second rod member, wherein the knuckle arm assemblies are adapted to engage the chassis upon insertion of the front-wheel drive assembly therein.

An adjustable battery tray for use with a radio-controlled car is provided. The battery tray includes a housing for receiving at least one battery, a flange extending from the housing, the flange having at least two bores defined therethrough, and a connector member adapted to be inserted through one of the at least two bores to secure the battery tray to a chassis of the radio-controlled car, wherein the battery tray is slidable relative to the chassis to adjust the center of gravity of the radio-controlled car.

A four-wheel drive assembly kit is provided. The four-wheel drive assembly kit includes a modular front-wheel drive assembly adapted to be inserted into a chassis of a radio-controlled car and a drive shaft gear adapted to be inserted onto a drive shaft of the radio-controlled car to couple the front-wheel drive assembly to the drive shaft.

A motor kit is provided, which includes a first motor having a first gear ratio, the first motor being capable of achieving a first RPM, and a second motor having a second gear ratio, the second gear ratio being less than the first gear ratio, and wherein the second motor is capable of achieving the first RPM.

A method for converting a radio-controlled car from a rear two-wheel drive configuration to a front two-wheel drive configuration is provided. The method includes providing a chassis, positioning a first drive assembly in a first portion of the chassis, the first drive assembly comprising a removable rear axle gear, inserting a modular second drive assembly into a second portion of the chassis, and removing the rear axle gear from the first drive assembly.

A method for adjusting a drive configuration of a radio-controlled car is provided. The method includes providing a chassis having a first drive assembly housed within a first portion of the chassis and a drive shaft operatively connected to the first drive assembly, the drive shaft extending from the first portion of the chassis into a second portion of the chassis, providing a modular second drive assembly, inserting the second drive assembly into the second portion of the chassis, and operatively connecting the second drive assembly to the drive shaft.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a radio-controlled toy car according to one embodiment of the present disclosure.

FIG. **2** is a bottom perspective view of a body of the radio-controlled toy car.

FIG. **3** is a top perspective view of a chassis of the radio-controlled toy car.

FIG. **4** is a rear perspective view of the chassis with a rear plate exploded from the chassis.